CLAIMS

What is claimed is:

1. A DSL front end, comprising:

an AM interference canceller that outputs a signal representative of AM interference;

a hybrid that provides a bi-directional interface with a communication channel, said hybrid generating an output signal representative of a signal received from said communication channel; and

a summer that combines said output of said AM interference canceller with a signal based upon the output of the hybrid such that the AM interference in said DSL front end is substantially cancelled.

2. The DSL front end according to claim 1, wherein:

said summer is a digital summer.

3. The DSL front end according to claim 1, wherein:

said digital subscriber line is an asymmetric DSL (ADSL).

4. The DSL front end according to claim 1, further comprising:

an adaptive circuit to determine an amount of differential mode coupling of said interfering AM radio signal with respect to an amount of common mode coupling of said interfering AM radio signal.

5. The digital subscriber line front end according to claim 1, further comprising:

a reference AM radio wave receiver to output said signal representative of AM interference.

6. The DSL front end according to claim 1, wherein:

said signal representative of AM interference is generated from a carrier signal recovery phase locked loop.

7. The DSL front end according to claim 1, wherein said AM interference canceller comprises:

a Hilbert bandpass filter.

8. The DSL front end according to claim 7, wherein said AM interference canceller further comprises:

an FFT analyzer to determine a frequency of a most significant AM radio signal.

9. The DSL front end according to claim 7, wherein said AM interference canceller further comprises:

an LMS module to adjust a frequency of I and Q channels of said Hilbert bandpass filter.

10. A digital subscriber line front end, comprising:

a DSL receiver;

a reference AM radio frequency signal;

an AM interference canceller module; and

a summer to combine a signal destined for input to said DSL receiver with an output of said AM interference canceller module.

11. The digital subscriber line front end according to claim 10, wherein:

said summer is a digital summer.

12. The digital subscriber line front end according to claim 10, wherein:

said digital subscriber line is an asymmetric DSL (ADSL).

13. The digital subscriber line front end according to claim 10, further comprising:

an adaptive circuit to determine an amount of differential mode coupling of said interfering AM radio signal with respect to an amount of common mode coupling of said interfering AM radio signal.

14. The digital subscriber line front end according to claim 10, wherein:

said reference AM radio frequency signal is generated from a reference AM radio wave receiver.

15. The digital subscriber line front end according to claim 10, wherein:

said reference AM radio frequency signal is generated from a carrier signal recovery phase locked loop.

16. The digital subscriber line front end according to claim 10, wherein said AM interference canceller comprises:

a Hilbert bandpass filter.

17. The digital subscriber line front end according to claim 16, wherein said AM interference canceller further comprises:

an FFT analyzer to determine a frequency of a most significant AM radio signal.

18. The digital subscriber line front end according to claim 16, wherein said AM interference canceller further comprises:

an LMS module to adjust a frequency of I and Q channels of said Hilbert bandpass filter.

19. The digital subscriber line front end according to claim 10, wherein said AM interference canceller comprises:

a carrier recovery phase locked loop tuned to a most significant frequency of an interfering AM radio signal;

a sine gain adjustment to generate a sine signal relating to said most significant frequency; and

a cosine gain adjustment to generate a cosine signal relating to said most significant frequency.

20. A method of canceling an AM interference signal from a digital subscriber line signal, comprising:

generating an AM interference replica signal; and

combining said generated AM interference replica signal with said digital subscriber line signal.

21. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 20, further comprising:

determining an amount of differential mode coupling of said interfering AM radio signal in said digital subscriber line signal.

22. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 20, further comprising:

determining an amount of common mode coupling of said interfering AM radio signal in said digital subscriber line signal.

23. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 20, further comprising:

determining a ratio of an amount of differential mode coupling of said interfering AM radio signal with respect to an amount of common mode coupling of said interfering AM radio signal.

24. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 20, wherein:

said combination of said generated AM interference replica signal with said digital subscriber line signal is achieved in a digital summer within a DSL receiver front end.

25. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 24, wherein:

said DSL receiver is an ADSL receiver.

26. The method of canceling an AM interference signal from a digital subscribe line signal according to claim 20, wherein:

said AM interference replica signal is generated using a Hilbert bandpass filter.

27. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 26, further comprising:

adjusting a bandpass frequency of said Hilbert bandpass filter using an LMS algorithm.

28. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 27, further comprising:

providing a coarse adjustment of said Hilbert bandpass filter with a determined carrier frequency.

29. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 28, further comprising:

determining said determined carrier frequency using an FFT analyzer.

30. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 20, wherein:

said AM interference replica signal is generated using a AM carrier recovery PLL, followed by gain adjustments of cosine and sine phases of said recovered AM carrier signal.

31. The method of canceling an AM interference signal from a digital subscriber line signal according to claim 30, further comprising:

adjusting said gain adjustments based on an LMS algorithm.

32. Apparatus for canceling an AM interference signal from a digital subscriber line signal, comprising:

means for generating an AM interference replica signal; and

means for combining said generated AM interference replica signal with said digital subscriber line signal.

33. The apparatus for canceling an AM interference signal from a digital subscriber line signal according to claim 32, further comprising:

means for determining an amount of differential mode coupling of said interfering AM radio signal in said digital subscriber line signal.

34. The apparatus for canceling an AM interference signal from a digital subscribe line signal according to claim 32, wherein:

said AM interference replica signal is generated using a Hilbert bandpass filter.